the smallest arteries. Very probably throughout the whole body under normal conditions, many capillaries entirely empty or only partially filled exist, which become permeable to the blood-current, after considerable increase of the quantity of blood. A distension of the capillary networks is not a necessary consequence of the overfilling. This occurs, however, under very pronounced filling of the vascular cavities with blood, and as the author believes, at those places and in those organs, such as in the thoracic and abdominal cavities, where the overfilling is most observable.

Even with pronounced filling of the vascular system no change in the capacity of the heart for doing work (*Leistungsfähigkeit*) occurred. The pulse-beats remained with increased percentage of blood, either unchanged both in animals with divided and in those with intact spinal cord, or they were diminished so irregularly that the latter point could only under certain circumstances be brought into account. The lungs were found congested *post-mortem*. An increased friction of the blood in the lungs is not alone sufficient to explain the non-increase of the blood-pressure. Neither congestion of the right heart nor of the large veins which open into it was found.

If after transfusion the quantity of blood in the transfused animal was diminished, the paradoxical phenomenon was exhibited that before one-half of the blood injected was recovered, the arterial blood-pressure sank much below the *niveau* which it had before the transfusion. By continuing the blood-letting the animal could be brought near to death, even though the quantity of blood which it had, surpassed by several per cents. of its body-weight the original (normal) quantity of blood; in other words, animals which had received from one to three times their original quantity of blood were much more sensitive to blood-letting than in the normal condition. Absolutely, transfused animals yield more blood on being bled to death, which is easily explained by the strongly pronounced filling of the vascular system, but relatively they require much larger, perhaps twice as large, or may be still larger quantities of blood (than in the non-transfused condition), in order to preserve the normal blood-pressure, *i. e.* that necessary for life. In an animal which has been bled from both carotids, until nearly dead, even after blood has ceased to flow from the divided arteries, blood again flows from the carotid on dividing the cervical spinal cord (this observation I have repeatedly verified. *Rep.*), and the stream is increased on raising the posterior extremities and pressing on the abdominal and thoracic walls. The author then discusses the upper and lower limits of the physiological filling of the vascular system, and then follows a short chapter on plethora and transfusion.—*Journ. Anat. and Phys.*, Nov. 1874, from *Ludwig's Arbeiten*, viii. 159.

5. *Acid of the Gastric Juice.*—M. RABUTEAU, at a late meeting of the Academy of Sciences in January last, communicated the result of experiments made by him to determine the nature of the acid which causes the acidity of the gastric juice. His results conform to those of Braconnot, Prout, Lassaigne, and Schmidt, that the gastric juice owes its acidity to hydrochloric, and not to lactic acid.—*Le Movement Médical*, Feb. 6, 1875.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Properties of Jaborandi.*—An additional supply of this new and remarkable drug has been lately received both in France and England, which has enabled investigators to determine more definitely its source, its properties, and to some extent its therapeutic application.

The results of these investigations are so very interesting as to seem to require a full account of them to be given here.

Prof. GUBLER, at a meeting of the *Société de Thérapeutique*, exhibited

(*Gazette Hebdom.*, Feb. 19, 1875) several branches, with the leaves attached, of the plant, showing that the true medicinal jaborandi is the *Polycarpus pinnatus*. The name jaborandi is, however, given in Brazil to many other plants, which should not be confounded with this more active species.

The indications for the employment of this drug cannot yet be fully stated, according to Prof. G., but some of them are clear enough, viz., the anasarca and œdema met with in rheumatism, albuminuria, and diseases of the heart. Under its use M. Gubler has found serous effusions diminish, and by it he has cut short attacks of influenza. One of the most remarkable results which he has observed has been its effects on chronic bronchitis and emphysema with asthmatic paroxysms. In five or six cases the amelioration has been instantaneous. He met with the first of these in 1873, in a man to whom a cup of tepid infusion had been administered during an excessive paroxysm of asthma, and who fifteen minutes afterwards began sweating and expectorating. Almost immediately after this his respiration became quite easy, the patient declaring that his malady had been taken from him as with the hand. The jaborandi may also be advantageously given in subacute rheumatism; as also as a salivary revulsive, like calomel.

There seems to be a very curious relation observed (*British Medical Journal*, Feb. 27, 1875) between jaborandi and belladonna, a relation partly of analogy but mainly of opposition. Jaborandi resembles atropia in quickening the pulse, flushing the face, and in exerting a more decided influence on adults than on children. On the other hand, it is diametrically opposed to atropia in its action on the salivary, sudoral, and mammary secretions, on the pupil, and on the minute arteries. Further, the tendency of belladonna to cause delirium, contrasts with that of jaborandi to cause prostration and sleepiness.

Several of these points have been studied in some detail, and merit further consideration. And first, as regards its sialagogue action: the influence of atropia in checking the flow of saliva from the submaxillary gland has been shown to be independent of the vaso-motor nerves. Heidenhain's experiments, which have since been repeated and extended by others, render it tolerably certain that this phenomenon is due to paralysis of the terminations of the secretory filaments of the chorda tympani. The effect of muscarin (the active principle of the *agaricus muscarius*) has been shown by Schmiedeberg and Koppe to be exactly antagonistic to that of atropia, *i. e.*, to cause profuse salivation by stimulating those nerve-ends which are paralyzed by the latter alkaloid. The mode of action of jaborandi seems in this respect to be identical with that of muscarin. It has been proved, both experimentally and clinically, that atropia is able to arrest the flow of saliva caused by jaborandi; and Ringer found that a dose of the latter drug speedily removed the dryness of the mouth in a case of accidental poisoning by atropia. The antagonism between the two is quite as definite in relation to the secretion of sweat as to that of saliva. Sweating after jaborandi may be prevented or checked by the subcutaneous injection of one-hundredth of a grain of atropia. Vulpian has even gone so far as to found a hypothesis concerning the nervous mechanism by which the perspiratory function is regulated, on the analogy of the antagonism in the two cases. He thinks it probable that the activity of the sweat-glands is under the control of nerve-fibres analogous to those supplied to the submaxillary gland by the chorda tympani, and that it is more independent of the vaso-motor system than is commonly supposed.

Next, as regards the eye: belladonna acts, not only on those branches of the third nerve which supply the circular fibres of the iris, but on those which supply the ciliary muscle also. Hence the dilatation of the pupil is accompanied by palsy of accommodation, making near objects seem blurred and indistinct.

The particulars bearing on the above statements will be found more fully detailed in the subjoined articles.

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7. *Recent Experiments with Jaborandi.*—Dr. Wm. Martindale gives an interesting account (*Pharmaceutical Journal*, Jan. 16, 1875) of an experiment